WHAT IS CLAIMED IS:

1. A rewritable optical disc with a spiral or concentric track comprising:

a groove formed with a sinusoidal wobble along the track;

a sector block disposed along the track;

sectors formed by dividing each sector block into a plurality of parts;

a synchronization mark formed in the first sector in each sector block; and

positive marks or negative marks formed in sectors other than the first sector in each sector block;

each positive mark being a first groove discontinuity creating a discontinuity of a first width W1 in the track direction of the groove,

each negative mark being a second groove discontinuity creating a discontinuity of a second width W0 in the track direction of the groove, and

each synchronization mark being a third groove discontinuity creating a discontinuity of a third width Ws in the track direction.

2. An optical disc as described in claim 1, wherein the first, second, and third groove discontinuities have a mirror surface.

3. An optical disc as described in claim 1, wherein the first, second, and third groove discontinuities are formed in maximum amplitude parts of the wobble groove.

4. An optical disc as described in claim 1, wherein the first, second, and third groove discontinuities are formed in the minimum amplitude part of the wobble groove.

5. An optical disc as described in claim 1, wherein the first, second, and third widths W1, W0, and Ws are all longer than the longest mark contained in data recorded to a groove and less than or equal to 1/2 wobble period.

6. An optical disc as described in claim 1, wherein the first, second, and third widths W1, W0, and Ws are all longer than the longest mark contained in data recorded to a groove and less than or equal to 1/4 wobble period.

7. An optical disc as described in claim 1, wherein the ratio between first, second, and third widths W1, W0, and Ws is 1:2:4 where any one of widths W1, W0, and Ws is 1.

8. An optical disc as described in claim 1, wherein the ratio between first, second, and third widths W1, W0, and Ws is 2:1:4.

9. An optical disc as described in claim 1, wherein the first, second, and third widths W1, W0, and Ws are two bytes, one byte, and four bytes, respectively.

10. A rewritable optical disc with a spiral or concentric track comprising:

a groove formed with a sinusoidal wobble along the track;

a sector block disposed along the track;

sectors formed by dividing each sector block into a plurality of parts;

a synchronization mark formed in the first sector in each sector block; and

positive marks or negative marks formed in sectors other than the first sector in each sector block;

each positive mark, negative mark, and synchronization mark being formed as a groove top offset portion where the groove is locally offset in a first direction perpendicular to the track direction, a groove bottom offset portion where the groove is locally offset in a second direction perpendicular to the track direction, or a combination of groove bottom offset portions and groove top offset portions.

11. An optical disc as described in claim 10, wherein:

a positive mark is a groove top offset portion;

a negative mark is a groove bottom offset portion; and

a synchronization mark is a combination of a groove top offset portion and groove bottom offset portion.

12. An optical disc as described in claim 10, wherein the groove bottom offset portions and groove top offset portions are disposed at maximum amplitude parts of the wobble groove and are offset in a track center direction.

13. An optical disc as described in claim 10, wherein groove bottom offset portions and groove top offset portions of a synchronization mark are mutually adjacent at n+(1/2) wobble cycles (where n is a positive integer).

14. An optical disc as described in claim 13, wherein n is 0.

15. A rewritable optical disc with a spiral or concentric track comprising:

a groove formed with a sinusoidal wobble along the track;

a sector block disposed along the track;

sectors formed by dividing each sector block into a plurality of parts;

a synchronization mark formed in the first sector in each sector block; and

positive marks or negative marks formed in sectors other than the first sector in each sector block;

each positive mark, negative mark, and synchronization mark being formed by a groove ascending-phase inversion portion for vertically phase inverting an approximately 1/4 wobble cycle part from a trough in the wobble groove, a groove descending-phase inversion part for vertically phase inverting an approximately 1/4 wobble cycle part from a peak in the wobble groove, or a combination of a groove ascending-phase inversion part and groove descending-phase inversion part.

16. An optical disc as described in claim 15, wherein a positive mark is formed by a groove ascending-phase inversion part, a negative mark is formed by a groove descending-phase inversion part, and a synchronization mark is formed by a combination of a groove descending-phase inversion part and groove ascending-phase inversion part.

17. An optical disc as described in claim 15, wherein both ends of said groove descending-phase inversion parts and groove ascending-phase inversion parts are a groove discontinuity.

18. An optical disc as described in claim 15, wherein both ends of said groove descending-phase inversion parts and groove ascending-phase inversion parts are an abruptly displaced groove.

19. A rewritable optical disc with a spiral or concentric track comprising:

a groove formed with a sinusoidal wobble along the track;

a sector block disposed along the track;

sectors formed by dividing each sector block into a plurality of parts;

a synchronization mark formed in the first sector in each sector block; and

positive marks or negative marks formed in sectors other than the first sector in each sector block;

each positive mark, negative mark, and synchronization mark being formed by a groove ascending-rectilinear portion connected to the wobble peak by forming the groove at a trough level from a trough in the wobble groove to an approximately 1/4 wobble cycle portion of the wobble groove, then abruptly changing to a peak level and forming the groove at the peak level in the next 1/4 wobble cycle portion,

a groove descending-rectilinear portion connected to the wobble trough by forming the groove at a peak level from a peak in the wobble groove to an approximately 1/4 wobble cycle portion of the wobble groove,

then abruptly changing to a trough level and forming the groove at the trough level in the next 1/4 wobble cycle portion, or

a combination of a groove descending-rectilinear portion and groove ascending-rectilinear portion.

20. An optical disc as described in claim 19, wherein a positive mark is formed by a groove ascending-rectilinear portion, a negative mark is formed by a groove descending-rectilinear portion, and a synchronization mark is formed by a combination of a groove descending-rectilinear portion and groove ascending-rectilinear portion.

21. An optical disc as described in claim 19, wherein each positive mark, negative mark, and synchronization mark is formed by said groove ascending-rectilinear portion being repeated for a plurality of cycles of the wobbled groove, said groove descending-rectilinear portion being repeated for a plurality of cycles of the wobbled groove, or said combination of a groove descending-rectilinear portion and groove ascending-rectilinear portion being repeated for a plurality of cycles of the wobbled groove.

22. An optical disc as described in claim 21, wherein each positive mark is formed by said groove ascending-rectilinear portion being repeated for a plurality of cycles of the wobbled groove,

each negative mark is formed by said groove descending-rectilinear portion being repeated for a plurality of cycles of the wobbled groove, and

each synchronization mark is formed by said combination of a groove descending-rectilinear portion and groove ascending-rectilinear portion being repeated for a plurality of cycles of the wobbled groove.

23. An address reading apparatus for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 1 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

an optical head (2) for emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

a subtracter (4) for getting a difference of signals from the two photodetectors and generating a difference signal;

a filter (6) for removing a wobble frequency component of a wobbled track and generating a groove discontinuity pulse;

a discriminator (12) for detecting a groove discontinuity pulse width and discriminating each synchronization mark, positive mark, and negative mark based on said width to generate a synchronization mark signal, positive mark signal, and negative mark signal; and

a demodulator (14) for generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

24. An address reading method for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 1 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

getting a difference of signals from the two photodetectors and generating a difference signal;

removing a wobble frequency component of a wobbled track and generating a groove discontinuity pulse;

detecting a groove discontinuity pulse width and discriminating each synchronization mark, positive mark, and negative mark based on said width to generate a synchronization mark signal, positive mark signal, and negative mark signal; and

generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

25. An address reading apparatus for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 10 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

an optical head (2) for emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

a subtracter (4) for getting a difference of signals from the two photodetectors and generating a difference signal;

a filter (6) for removing a wobble frequency component of a wobbled track and generating a groove bottom offset portion pulse in a negative direction and a groove top offset portion pulse in a positive direction;

discriminators (52, 54, 12) for discriminating each synchronization mark, positive mark, and negative mark based on said groove top offset portion pulse, groove bottom offset portion pulse, and groove bottom offset portion pulse and groove top offset portion pulse pair to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

a demodulator (14) for generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

26. An address reading method for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 10 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

getting a difference of signals from the two photodetectors and generating a difference signal;

removing a wobble frequency component of a wobbled track and generating a groove bottom offset portion pulse in a negative direction and a groove top offset portion pulse in a positive direction;

discriminating each synchronization mark, positive mark, and negative mark based on said groove top offset portion pulse, groove bottom offset portion pulse, and groove bottom offset portion pulse and groove top offset portion pulse pair to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

27. An address reading apparatus for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 15 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

an optical head (2) for emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

a subtracter (4) for getting a difference of signals from the two photodetectors and generating a difference signal;

a filter (6) for removing a wobble frequency component of a wobbled track and generating a groove descending-phase inversion part pulse in a negative direction and a groove ascending-phase inversion part pulse in a positive direction;

discriminators (52, 54, 12) for discriminating each synchronization mark, positive mark, and negative mark based on said groove ascending-phase inversion part pulse, groove descending-phase inversion part pulse, and groove descending-phase inversion part pulse and groove ascending-phase inversion part pulse pair to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

a demodulator (14) for generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

28. An address reading method for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 15 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

getting a difference of signals from the two photodetectors and generating a difference signal;

removing a wobble frequency component of a wobbled track and generating a groove descending-phase inversion part pulse in a negative direction and a groove ascending-phase inversion part pulse in a positive direction;

discriminating each synchronization mark, positive mark, and negative mark based on said groove ascending-phase inversion part pulse, groove descending-phase inversion part pulse, and groove descending-phase inversion part pulse and groove ascending-phase inversion part pulse pair to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

29. An address reading apparatus for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 19 and accumulating 1 and 0 data obtained from positive

marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

an optical head (2) for emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

a subtracter (4) for getting a difference of signals from the two photodetectors and generating a difference signal;

a filter (6) for removing a wobble frequency component of a wobbled track and generating a groove descending-rectilinear portion pulse in a negative direction and a groove ascending-rectilinear portion pulse in a positive direction;

discriminators (52, 54, 12) for discriminating each synchronization mark, positive mark, and negative mark based on said groove ascending-rectilinear portion pulse, groove descending-rectilinear portion pulse, and groove descending-rectilinear portion pulse and groove ascending-rectilinear portion pulse pair to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

a demodulator (14) for generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

30. An address reading method for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 19 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

getting a difference of signals from the two photodetectors and generating a difference signal;

removing a wobble frequency component of a wobbled track and generating a groove descending-rectilinear portion pulse in a negative direction and a groove ascending-rectilinear portion pulse in a positive direction;

discriminating each synchronization mark, positive mark, and negative mark based on said groove ascending-rectilinear portion pulse, groove descending-rectilinear portion pulse, and groove descending-rectilinear portion pulse and groove ascending-rectilinear portion pulse pair to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

31. An address reading apparatus for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 21 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

an optical head (2) for emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

a subtracter (4) for getting a difference of signals from the two photodetectors and generating a difference signal;

a filter (6) for removing a wobble frequency component of a wobbled track and generating a groove descending-rectilinear portion pulse in a negative direction and a groove ascending-rectilinear portion pulse in a positive direction;

a first counter (93) for counting a number of groove descending-rectilinear portion pulses in a negative direction contained in one sector;

a second counter (94) for counting a number of groove ascending-rectilinear portion pulses in a positive direction contained in one sector;

discriminators (95 to 99) for comparing a first count from the first counter and a second count from the second counter and discriminating each synchronization mark, positive mark, and negative mark according to whether the first count is sufficiently high, the second count is sufficiently high, or the first count and second count are substantially equal to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

a demodulator (14) for generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

32. An address reading method for detecting synchronization marks, positive marks, and negative marks contained in an optical disc as described in claim 21 and accumulating 1 and 0 data obtained from positive marks and negative marks dispersedly contained in one sector block to read said sector block address, comprising:

emitting a laser beam to a track of the optical disc and detecting reflected light by means of two photodetectors separated along the track direction;

getting a difference of signals from the two photodetectors and generating a difference signal;

removing a wobble frequency component of a wobbled track and generating a groove descending-rectilinear portion pulse in a negative direction and a groove ascending-rectilinear portion pulse in a positive direction;

counting a number of groove descending-rectilinear portion pulses in a negative direction contained in one sector as a first count;

counting a number of groove ascending-rectilinear portion pulses in a positive direction contained in one sector as a second count;

comparing the first count and second count and discriminating each synchronization mark, positive mark, and negative mark according to whether the first count is sufficiently high, the second count is sufficiently high, or the first count and second count are substantially equal to generate a positive mark signal, negative mark signal, and synchronization mark signal; and

generating 1s and 0s according to each positive mark signal and negative mark signal contained between one synchronization mark signal and a next synchronization mark signal.

33. An optical disc as described in claim 19, wherein the synchronization mark further has a block mark indicating a sector block starting position.

34. An optical disc as described in claim 33, wherein said block mark is formed by disposing a discontinuity in the track groove.

35. An optical disc as described in claim 33, wherein said block mark is formed by locally changing a width of the track groove.

36. An optical disc as described in claim 33, wherein said block mark is formed by locally changing wobble amplitude.

37. An optical disc as described in claim 19, wherein each wobble cycle is formed so that the duty ratio differs according to positive data and negative data.

38. An optical disc as described in claim 19, wherein only one edge of the track groove is wobbled.